

Strassburg in Alsace.—University. Professor Hergesell; selected chapters in modern meteorology treated by the semi-annual method, two hours weekly.

Stuttgart.—Technical High School. No meteorology.

Tübingen.—The University. No meteorology.

Würzburg.—University. No meteorology.

AUSTRIA.

Czernowitz.—The University. No meteorology.

Graz.—The University. Professor Bendof; meteorology, three hours a week. Technical High School. No meteorology.

Innsbruck.—University. Professor Trabert; weather and climate, three hours weekly; the föhn, one hour weekly.

Prague.—German University. Professor Spittaler. Practical meteorology, viz, instruments, observations, and computations, three hours weekly. German Technical High School. No meteorology.

Vienna.—The University. Professor Hann; introduction to the computation and reduction of meteorological and climatological observations two hours weekly. Professor Pernter; meteorology, viz, three hours a week on the theory of instruments and practise in observing and computations at the Central Institute for Meteorology. Doctor Valentin; on barometric hypsometry, one hour a week. Technical High School. No meteorology.

SWITZERLAND.

Basle.—No meteorology.

Berne.—University. No meteorology.

Zurich.—University. Professor Stoll; the atmosphere and the hydrosphere. Polytechnicum. No meteorology.

Out of 44 universities and technical schools using the German language 13 recognize meteorology as worthy of special mention.

In the *Mitteilungen* for May, 1905, page 118, Doctor von Lendenfeld, of Prague, gives the result of a study of the hot winds in Melbourne.

The hot winds of Melbourne.—These hot winds come from the north and occur throughout the summer of the Southern Hemisphere. They may last from a few hours to three days, increasing steadily in warmth and velocity until they reach 40° to 44°C. and 60 or 80 kilometers per hour. They end with the sudden formation of thunderstorms; and the wind swings around to the south and the temperature may fall to 22°C., in the first hour. They occur on the front of a region of low pressure which moves from west to east, and their severity increases in proportion as the center of low pressure approaches the city of Melbourne. The sudden shift of wind and fall of temperature occurs at the moment when the center of the pressure passes the meridian of Melbourne. This hot wind comes from the interior of Australia; it passes over the southwest portion of the Australian Alps, lying north of Melbourne at an altitude of about 700 meters, and descends along the southern slope of these hills. By this descent the wind becomes compressed and heated so that it has something of the characteristics of the föhn wind as to heat and temperature. By drying up the sands and soil over which the wind blows it allows the particles that would otherwise be stuck together by moisture to separate from each other so that a great mass of dust is carried by the wind. The heavens are darkened and the sun is invisible. The leaves of the trees dry up and drop off on account of its warmth and the unusual quantity of bacteria causes flesh, milk, and other foods to spoil rapidly.

[However, this is not a föhn wind properly so called as the latter derives its extra heat from the latent heat set free by condensation of vapor, whereas the hot winds of Melbourne derive their extra heat from the hot, dry soil of the interior of Australia.—Ed.]

SHOWERS OF FISH.

Although for a century past numerous miscellaneous questions that are common among those who have not considered the subject carefully have been banished from meteorological treatises yet we find them cropping up everywhere in the classes of children devoted to nature study. In answer to an occasional correspondent it may be well to state in these columns that it is well established as highly probable that in some cases violent winds have swept up from shallow ponds and wet swamps not only the water and the leaves but also the smaller animals such as little fishes, tadpoles and frogs. In fact, in an early number of the *MONTHLY WEATHER REVIEW* will be found on record a case in which a small turtle was carried up and was coated with ice before it fell as the center of a hailstone. Heavy objects invariably come down soon and within a few miles, but such expressions as "a rain of toads", "a rain of fish" are exaggerations. The yellow pollen of the pine is often carried up in great quantity and descending forms a so-called "shower of sulphur". Sometimes the spores of fungi are brought down by the rain and grow so rapidly after the rain is over that the ground is covered with a reddish slime, sometimes called a "shower of blood". At other times great quantities of the spawn of frogs descending with the rain and gathering into the pools of water make a "shower of tadpoles". But the so-called "shower of frogs" and the "shower of angle worms" are not likely to be cases of this kind. The latter are often drowned out of their abodes in the soil and seek fresh air at the surface. We do not know that these showers of frogs and worms have been very carefully investigated by any naturalist, and the subject is not very important, but in general the study of such questions belong to natural history, not to meteorology.

HAWAIIAN CLIMATOLOGY.

For many years it has been the policy of the Weather Bureau to publish in the *MONTHLY WEATHER REVIEW* climatological data from different parts of the globe that were not likely to become otherwise accessible to the student of meteorology. Those interested in the climatology of Hawaii will notice that the tabular data from that territory is now restricted to the table of data for Honolulu. This is because the general monthly report of the Climate and Crop Section of Hawaii gives very full details and is printed in a sufficiently large edition to allow of furnishing copies to all who are especially interested in the subject. These may be had by direct application to the Section Director, U. S. Weather Bureau office, Honolulu, T. H.

SCIENTIFIC AERONAUTICS.

We have published some account of the action taken at the fourth conference of the International Committee for Scientific Ballooning which took place on the 9th of August, 1904, at St. Petersburg.

An official copy of the resolutions then adopted was forwarded to the United States Government through the Russian Ambassador on April 27, 1905, drawing attention to the necessity of an international organization for aerial sounding and asking whether the Government of the United States will contribute toward the printing of the publications.

The resolutions state that the sum expended for publication during the first three years was 30,000 francs or about \$6000, and that the same amount will probably be needed in the future. Up to the present time the expense has been defrayed by one of the countries, viz, Germany, but it is recommended that each country be invited to defray a share of the expense, receiving in return a corresponding number of copies of the publication. Private individuals are also free to contribute or subscribe.

The committee believes that the organization of stations for flying kites for meteorological purposes will be very important either in connection with or independent of aerial soundings and will fill up the wide gaps between the balloon stations. The committee decided to have ascensions made for three successive days in April and also at the end of August, 1905, and to make the times of ascent accord with the hours of observations for the morning weather charts. The committee recommends it as of the highest importance that steam vessels, both governmental and private, should be supplied with apparatus for doing kite work at sea, and that the officials of these vessels should be instructed in the necessary handling of the instruments.

The committee considers it of importance that the international observations of clouds be made strictly according to the definitions of the international classification and by experienced observers. It is especially necessary that aerial soundings should be accompanied by simultaneous observations of clouds.

The president of the committee is requested to select the best situations for mountain stations and to obtain as complete observations as are possible. The observations on mountains will be printed in connection with the records of the sounding balloons and kites.

The work of aerial exploration by means of sounding balloons and kites as well as permanent mountain stations is one that may well excite enthusiasm and emulation among the wealthy patrons of science in America. It is not necessary to leave all this work to the Carnegie Institution for Research, or to the overburdened universities, or to the regular routine of Weather Bureau methods. There is abundant room here for independent individual originality and local enterprise. The Great Plains of the Mississippi watershed offer unparalleled advantages for the highest balloon work and kite work. The Rocky Mountains on the west and the Appalachians on the east offer a host of peaks from 6000 to 15,000 feet high, some of them already crowned with hotels and dwellings where self-registering apparatus can easily be kept in operation. Similarly the numerous owners of private yachts can contribute immensely to our study of the atmosphere over the ocean, if, like Teisserenc de Bort, they will but devote their vessels, when not otherwise in use, to meteorological work on the high seas. What is especially needed is kite work and balloon work in the region of the Saragossa Sea and in sections to and fro across the equator from tropic to tropic on the Atlantic, Pacific, and Indian oceans.

We shall never know much about the atmosphere so long as we neglect these opportunities. Nor shall we ever understand the mechanics of storms and the general circulation of the atmosphere until we have enough observations throughout its whole extent to check our various hypotheses and enable us to concentrate on the one true theory.

MIRAGE AFTER SUNSET.

Under date of September 19, 1904, Mr. Charles N. Brown, of South Orange, N. J., communicates the following account of a phenomenon that was seen by himself and many others:

Our party of eleven were in camp on Staten Island, N. Y., at the edge of the bluff 400 feet east of the pavilion at Barbour's Grove (the Clark estate) on the south shore of Princess Bay, north from Keyport a mile and a half. At 8 o'clock p. m. on August 16, 1904, our attention was attracted by strange lights 400 yards out from shore. The water was still, the moon (two hours from setting) shone on our backs and the air was still with no cloud in the sky. The lights were stationary and we at once recognized the Luna Park, Dreamland, and tower lights (which we could see every night). On their left were the lights of Midland Beach, on their right was depicted a long narrow strip of seashore many miles long, very distinct on the water, with several bright lights on the extreme right. In front of Coney Island a boat moved with a light in it, apparently a rowboat with a man in it rowing. All this was seen right

side up, and you can imagine how keenly we enjoyed it all and longed to reproduce it with a camera. After ten minutes during which time we went down to the beach (fourteen feet to sea-level), the vision passed suddenly away. At that moment the mirage cloud, which was before invisible, was seen. Then we saw in the usual place the real lights of Coney Island. This cloud was entirely horizontal, very narrow, black, and stationary. It began to change very shortly and some of us watched it for an hour and a half still suspended over the horizon, during which time it almost entirely disappeared and reappeared seven or eight times.

A QUADRUPLE RAINBOW.

Ciel et Terre publishes the following account of a quadruple rainbow observed at Mons, Belgium, August 31, 1904, by M. A. Bracke:

A shower had just ceased (17 h. 55 m. to 18 h. 30 m.) when a superb rainbow appeared—a complete semicircle, very broad, with magnificent colors, presenting distinctly the seven hues of the spectrum. A little above, less distinct and less broad, was the segment of an arc showing the red, the yellow, and the green. Below, and very near the large arc, was a third, having a breadth about equal to a quarter of the last, and showing but two colors—mauve-red and green. Finally, beneath this same arc was distinctly visible, but at intervals only, a fourth, colored like the one above it. The phenomenon lasted a quarter of an hour.

METEOR IN MONTANA.

The Inter-Lake of Kalispell, Mont., under date of July 14, 1905, contains the following item regarding a brilliant meteor seen there on July 8:

A brilliant meteor passed over this section last Saturday night, 12:35 seventy-fifth meridian time, Sunday, July 9, 1905, and apparently was visible over northern Montana, Idaho, and Washington. Reports from widely separated localities give practically the same account. The meteor lighted up the country like day for an instant and was so near the earth that the rush through the air was plainly heard.

REORGANIZATION OF METEOROLOGY IN AUSTRALIA.

The following paragraph from an editorial in the Daily Telegraph, Sydney, N. S. W., April 11, 1905, shows that a process of reorganization of scientific work is going on that will, we hope, be of advantage to meteorology and climatology. Now that the federal government is step by step consolidating Australian policies, we may expect that meteorology will be differentiated from astronomy and other cognate subjects, and will be allowed to stand by itself. A general meteorological office and a daily weather map of the whole continent would be a most important contribution to meteorology.

OBSERVATORY CONTROL.

Arrangements will probably shortly be made by the federal authorities to take over the astronomical and meteorological work of the various states and bring them under one controlling head with subdepartments in the states. Owing to this fact, the New South Wales minister for education does not propose to take any steps in the direction of filling the position of government astronomer and meteorologist, now made vacant through the retirement of Mr. Russell. During the past twelve months Mr. H. A. Lenehan has been acting government astronomer and Mr. H. A. Hunt acting meteorologist. The minister states that these gentlemen will continue to occupy these positions, pending the changes to be made by the federal government in taking over the observatory department.

BACK NUMBERS.

The Editor occasionally receives requests from libraries for volumes or numbers of the MONTHLY WEATHER REVIEW for the earlier years, 1873-1893, in order to complete sets that are accessible to the public and are frequently used. Those who have such early numbers to dispose of will confer a favor by notifying the Editor.—C. A.

THE STATION AT PORT AU PRINCE, HAITI.

Mr. R. E. Pollock, Assistant Observer, Weather Bureau, reports under date of July 16, 1905, that he has established a Weather Bureau station at the observatory of the Institution Saint Louis de Gonzague, Port au Prince, Haiti, and has